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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,056

05/11/2006

David R McMurtry

127926

6323

25944

7590

09/04/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

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EXAMINER

DAVIS, OCTAVIA L

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,056	<b>Applicant(s)</b> MCMURTRY ET AL.	
	<b>Examiner</b> OCTAVIA DAVIS	<b>Art Unit</b> 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 5/23/08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 6, 9 - 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotze et al (6,591,208) in view of Lotze et al (6,546,643).

Regarding claims 1, 4 and 18, Lotze et al disclose a correction method for a coordinate measuring apparatus comprising determining the stiffness of a coordinate positioning apparatus (See Col. 4, lines 65 - 67 and Col. 7, lines 43 - 45), determining the load factor applied by a probe head 9 at any particular instant (See Col. 3, lines 43 - 50 and Col. 4, lines 10 - 13) and a processor that determines the measurement error at the surface sensing device 13 caused by the load using the stiffness and the load factor, wherein the device is a contact probe (See Col. 3, lines 55 - 65 and Col. 4, lines 62 - 65) but does not disclose that the probe head is an articulating probe head and determining a load or one or more factors relating to the load applied by a motion of the articulating probe head about at least one axis. However, Lotze et al disclose an articulating device for the probe head of a coordinate measuring apparatus comprising a probe head 4 that is mounted in a receptacle of an articulating device that is attached to a measuring apparatus, the measured values from the measuring apparatus being recorded by a coordinate measuring apparatus and corrected in a correcting unit 2 (See Col. 3, lines 56 - 60 and Col. 4, lines 10 - 23) and determining a measurement error caused by a load (See Col. 6, lines 15 - 21 and 54 - 65 and Col. 7, lines 16 - 20).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lotze et al according to the teachings of Lotze et al for the purpose of, advantageously providing an articulating device for a probe head of a coordinate measuring apparatus in which the bending that is caused by the probe configuration can be corrected in a n improved manner (See Lotze et al, Col. 2, lines 31 – 33).

Regarding claim 6, in Lotze et al, the stiffness is determined by applying a load to the apparatus and measuring the deflection (See Col. 3, lines 43 – 50 and Col. 4, lines 6 – 13) and by measuring an object of known dimensions 5 while measuring the load.

Regarding claims 9 and 10, in Lotze et al, the contact probe is positioned so that the stylus or probe pin 13 is in contact with the surface of an object of known dimensions 5 and measurement readings of the surface are taken when different probe forces are applied (See Col. 3, lines 64 – 67).

Regarding claims 11 - 14, in Lotze et al, an accelerometer is used to determine the load factor and the one or more factors which relate to the load is determined from system variables of the apparatus (See Col. 4, lines 58 – 61).

Regarding claim 15, in Lotze et al, the offset of the measurement path is determined of the surface sensing device from a datum point, wherein this offset is used in calculating the measurement error (See Col. 11, lines 38 – 46).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 3, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotze et al (208') and Lotze et al (643'), as applied to claims 1, 4, 6, 9 – 15 and 18 above, and further in view of McMurtry et al (5,152,072).

Regarding claims 2, 3, 16 and 17, Lotze et al and Lotze et al disclose all of the limitations of these claims except that the load comprises a torque and a linear force, determining the offset of the measurement path of the surface sensing device from a datum point, wherein this offset is used in calculating the measurement error, the measurement error being substantially proportional to an equation including L which is the distance from a datum point in the articulating probe head to the measurement path of the surface sensing device, q which is the angle between the surface sensing device and an axis normal to the axis of a structure onto which the articulating probe head is mounted and an angular deflection of the mount and L being the distance between the tip of the surface sensing device and the centre of rotation. However, McMurtry et al disclose a surface sensing device comprising a load that includes a torque and a linear force (See Col. 2, lines 27 – 29, Col. 3, lines 7 – 11 and Col. 5, lines 31 - 37), the measurement error being substantially proportional to an equation that includes distance, angle and deflection and the distance being between the tip of the surface sensing device and the center of rotation (See Col. 2, lines 16 – 21 and 36 – 41 and Col. 3, lines 19 – 29, See Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lotze et al and Lotze et al according to the teachings of McMurtry et al for the purpose of, advantageously providing a support structure for an elongate surface-sensing

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stylus useful in obtaining continuous data on the position of a surface (SeeMcMurtry et al, Col. 1, lines 38 - 40).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lotze et al (208') and Lotze et al (643'), as applied to claims 1, 4, 6, 9 – 15 and 18 above, and further in view of Nai (6,568,242).

Regarding claim 5, Lotze et al and Lotze et al disclose all of the limitations of these claims except that the surface sensing device is a non-contact probe. However, Nai discloses a system for reducing effects of acceleration induced deflections on measurements made by a machine using a probe comprising a scanning probe 20 that is non-contacting (See Col. 3, lines 46 - 51).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lotze et al and Lotze et al according to the teachings of Nai for the purpose of, advantageously reducing measuring errors made by a machine using different types of probes (See Col. 2, lines 60 - 63).

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***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotze et al (208') and Lotze et al (643'), as applied to claims 1, 4, 6, 9 – 15 and 18 above, and further in view of Bernhardt et al (5,594,668).

Regarding claims 7 and 8, Lotze et al and Lotze et al disclose all of the limitations of these claims except that the deflection is determined from the difference between the known and measured dimensions of the object and the known dimensions of the object are determined by measuring it at slow speed. However, Bernhardt et al disclose a method for correcting coordinate measurement on workpieces based on bending characteristics comprising determining the stiffness from the differences between measured values of a stiffness probe and of a probe to be calibrated as a result of reactive forces occurring during difference accelerations or velocities (See Col. 7, lines 23 - 39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lotze et al and Lotze et al according to the teachings of Bernhardt et al for the purpose of, advantageously providing a method for correcting measuring errors in a coordinate measuring machine to reduce the measuring uncertainty of existing coordinate measuring



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machines and to permit coordinate measuring machines to be built with a lighter structure in the future (See Bernhardt et al, Col. 2, lines 48 - 55).

### ***Response to Arguments***

10. Applicant's arguments with respect to these claims have been considered but are moot in view of the new grounds of rejection.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Vander Wal, III (5,430,948) discloses a coordinate measuring machine certification system.

121. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Octavia Davis whose telephone number is 571-272-2176. The examiner can normally be reached on Mon through Thurs from 9 to 5. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz, can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system,

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see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Edward Lefkowitz/

Supervisory Patent Examiner, Art Unit 2855

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8/31/08

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